AMENDMENTS TO THE CLAIMS

This listing of claims will replace all prior versions, and listings, of claims in the application:

Listing of Claims:

1. (Previously Presented): A light valve comprising:
two cover layers,
at least one of which is transparent,
and an optically active layer between these cover layers,
with the optically active layer including:
a solution comprising a polymer dissolved in a solvent,
with the polymer and the solvent reversibly forming finely divided separate phases upon heating to a specific temperature,
thereby reversibly turning the optically active layer from relatively transparent to relatively opaque, wherein:
most of said polymer is formed between said cover layers by polymerizing a monomer which is dissolved in said solvent.

2. (Previously Presented): The light valve of Claim 1, wherein:
said monomer is at least 15% soluble in said solvent at a temperature low enough that the heat of polymerization of said monomer does not rise to the phase separation temperature of the solution comprising said solvent, said monomer, and said polymer which is in the process of being formed from said monomer.

3. (Previously Presented): The light valve of Claim 1, wherein:
a crosslinking monomer is added, with a functionality of two or more, and which copolymerizes with said monomer, and which is soluble in the solution comprising said solvent and said monomer, which is added to the solution so that said polymerization forms a crosslinked gel.

4. (Previously Presented): The light valve of Claim 1, wherein:
said solvent is primarily water.

5. (Previously Presented): The light valve of Claim 1, wherein:
said monomer's polymerization is rapid, repeatable, and relatively complete, due to its conjugated unsaturation.

6. (Previously Presented): The light valve of Claim 5, wherein:
said conjugated unsaturation is acrylamide.

7. (Previously Presented): The light valve of Claim 6, wherein:
said acrylamide has a saturated hydrocarbon group substituted onto an unsaturated carbon atom.

8. (Previously Presented): The light valve of Claim 7, wherein:
said acrylamide has N-substituted group or groups that are saturated hydrocarbons.

9. (Previously Presented): The light valve of Claim 8, wherein:
more than half of said monomer is N- diethyl acrylamide, N- diethyl methacrylamide or a mixture thereof.

10. (Previously Presented): The light valve of Claim 1, wherein:
said monomer is a mixture of monomers which are selected and proportioned such that the light valve switches at a desired temperature.

11. (Previously Presented): The light valve of Claim 10, wherein:
said mixture of monomers forms a copolymer that is relatively random.

12. (Previously Presented): The light valve of Claim 1, wherein:
said polymer includes polymer chains which do not have many non-chemical interchain bonds which reversibly crosslink the chains.

13. (Previously Presented): The light valve of Claim 1, wherein:
the backbone of said polymer is relatively free from stearic hindrance and is flexible when dissolved in said solvent in order for said polymer's phase separation with said solvent to occur over a narrow temperature band.

14. (Previously Presented): The light valve of Claim 1, wherein:
said polymer formed does not react with said solvent, oxygen, upon exposure to sunlight or a combination thereof.

15. (Previously Presented): The light valve of Claims 1 or 3, wherein:
a catalyst for said polymerization is a reducer and an oxidizer.

16. (Previously Presented): The light valve of Claim 15, wherein:
said catalyst is a persulfate salt plus a metabisulfite salt.

17. (Currently Amended): The light valve of Claim 1, wherein:
the light valve is stabilized against aging by oxygen and ultraviolet light by the addition of a hindered amine stabilizer which is soluble in said ~~optically active layer and said monomer~~ solution.

18. (Previously Presented): The light valve of any one of Claim 1 through 14 or 17, wherein:
it is used to make architectural glazings that control unwanted solar heat and glare.

19-23 (Cancelled).

24. (Previously Presented): A process for making a light valve which includes:
two cover layers,
at least one of which is transparent,
and an optically active layer between these cover layers,
with the optically active layer including:
a polymer dissolved in a solvent,
with the polymer and the solvent reversibly forming finely divided separate phases upon heating to a specific temperature,
thereby reversibly turning the optically active layer from relatively transparent to relatively opaque,
wherein:
most of said polymer is formed between said cover layers by polymerizing a monomer which is dissolved in said solvent,
the process comprising:
forming a seal between the two cover layers, and with the seal spacing apart the cover layers, thus forming a cavity, wherein:

said cavity is flushed with an inert gas and subsequently into said cavity is injected a liquid which then becomes a solid layer, with the solid layer having a variable transmission of light.

25. (Cancelled).

26. (Previously Presented): The process of Claim 24, wherein:
said liquid includes a monomer solution.

27. (Previously Presented): The process of Claim 24, wherein:
said cover layers are etched to improve the adhesion between said cover layers and said solid layer.

28. (Previously Presented): The process of Claim 24, wherein:
a silane is applied to said cover layers to improve the adhesion between said cover layers and said solid layer.

29. (Previously Presented): The process of Claim 28, wherein:
said silane is a vinyl silane.

30. (Previously Presented): The process of Claim 28, wherein:
said cover layers are heated to bond said silane to said cover layers before said injecting.

31. (Previously Presented): The process of Claim 24, wherein:
said cover layers joined with said seal are cooled at one or more of the following: before said injecting, during said injecting, when said liquid is becoming said solid layer, in order to prevent the heat thereby released from reducing said light valve's optical performance or resistance to aging.

32. (Previously Presented): The process of Claim 24, wherein:
said liquid is cooled before said injecting in order to prevent the heat released from said liquid becoming said solid layer from reducing said light valve's optical performance or resistance to aging.

33. (Previously Presented): The process of Claim 24, wherein:
said cavity is flushed with said inert gas to prevent incomplete polymerization, or bubble formation in said solid layer.

34. (Previously Presented): The process of Claim 33, wherein:
the inert gas is nitrogen, argon, or helium.

35. (Previously Presented): The process of Claim 24, wherein: dissolved gases are removed from said liquid before it is injected into said cavity to prevent incomplete polymerization, or bubble formation in said solid.

36. (Previously Presented): The process of Claim 24, wherein: said liquid is formed by combining two or three liquid components delivered by synchronized metering pumps in order to have a constant ratio between said components, and to fill said cavity with the desired volume of said liquid.

37. (Previously Presented): The process of Claim 24, wherein: said liquid is injected into said cavity through slot die(s) or hollow needle(s).

38. (Previously Presented): The process of Claim 24, wherein: a tilting top table is used to help prevent, or to remove bubbles from said liquid in said cavity before it becomes said solid.

39. (Previously Presented): The process of Claim 24, wherein: said seal is made from a two-sided tape or a ribbon of adhesive.

40. (Previously Presented): The process of Claim 24, wherein: said seal is made from a sealant that softens upon heating, and becomes a solid again on cooling.

41. (Previously Presented): The process of Claim 40, wherein: said two cover layers with said sealant placed between them are placed in a flat or roller press which is heated in order to soften and compress said sealant in order to form the desired spacing between said cover layers , and to bond said cover layers together.

42. (Previously Presented): The process of Claim 24, wherein: after said liquid has become said solid, an outer seal is formed outside, said outer seal to form a durable mechanical connection between said two cover layers.

43. (Previously Presented): The process of Claim 42, wherein: said outer seal is made from a sealant that melts upon heating for application as a liquid, and becomes a solid again on cooling.

44. (Previously Presented): The process of Claim 42, wherein: said outer seal is made with a sealant based on a saturated hydrocarbon liquid or solid polymer, with functionality for crosslinking.

45. (Cancelled).

46. (Previously Presented): The process of Claim 24, wherein: said light valve is made on production machinery that has been designed for making sealed double pane windows, and that has been modified for making said cavity thinner, and has been added on to enable injecting said liquid into said cavity.

47. (Currently Amended): The process of claim 46, wherein: the light valve is used to make architectural glazings that control unwanted solar heat or glare.

48. (Previously Presented): The process of Claim 24 wherein: some of the apparatus for preparing said liquid for said injecting, and/or for injecting said liquid, is contained within a cooling chamber.

49. (Previously Presented): The process of Claims 24, 31 or 38, wherein: said injecting is performed on a tilting top table, and/or a cooled plate.

50. (Previously Presented): The light valve of Claim 3, wherein: a catalyst present for said crosslinking monomer is a reducer and an oxidizer.

51. (Cancelled).

52. (Previously Presented): A process for making the light valve of claim 24 wherein the seal includes fill and vent ports.

53. (Previously Presented): The process of Claim 38, wherein: the tilting top table is cooled.

54. (Previously Presented): The process of Claim 52, wherein said outer seal covers said fill and vent ports, and prevents loss of liquid components of said solid layer.

55. (Previously Presented): The process of Claim 49 wherein said injecting is performed within a cooling chamber.

56. (Previously Presented): The process of claim 26 wherein said monomer is at least 15% soluble in said solvent at a temperature low enough that the heat of polymerization of said monomer does not rise to the phase separation temperature, of the solution comprising said solvent, said monomer and said polymer, which is in the process of being formed from said monomer.

57. (Previously Presented): The process of claim 26 wherein a crosslinking monomer is added, with a functionality of two or more, and which copolymerizes with said monomer, and which is soluble in the solution comprising said solvent and said monomer, which is added to the solution so that said polymerization forms a crosslinked gel.

58. (Previously Presented): The process of claim 26, wherein said solvent is primarily water.

59. (Previously Presented): The process of claim 57, wherein said monomer's polymerization is rapid, repeatable, and relatively complete, due to its conjugated unsaturation.

60. (Previously Presented): The process of claim 59, wherein said conjugated unsaturation is acrylamide.

61. (Previously Presented): The process of claim 60, wherein said acrylamide has a saturated hydrocarbon group substituted onto an unsaturated carbon atom.

62. (Previously Presented): The process of claim 60, wherein said acrylamide has an N-substituted group or groups that are saturated hydrocarbons.

63. (Previously Presented): The process of claim 59, wherein more than half of said monomer is N- diethyl acrylamide, N- diethyl methacrylamide or a mixture thereof.

64. (Previously Presented): The process of claim 26, wherein said monomer is a mixture of monomers which are selected and proportioned such that the light valve switches at a desired temperature.

65. (Previously Presented): The process of claim 64, wherein said mixture of monomers forms a copolymer that is relatively random.

66. (Previously Presented): The process of claim 24, wherein: said polymer includes polymer chains which do not have many non-chemical interchain bonds which reversibly crosslink the chains.

67. (Previously Presented): The process of Claim 24, wherein the backbone of said polymer is relatively free from stearic hindrance and is flexible when dissolved in said solvent in order for said polymer's phase separation with said solvent to occur over a narrow temperature band.

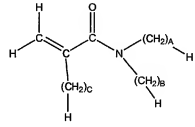
68. (Previously Presented): The process of Claim 24, wherein said polymer formed does not react with said solvent, oxygen, upon exposure to sunlight or a combination thereof.

69. (Previously Presented): The process of Claim 24, 57 or 58 wherein a catalyst for said polymerization is a reducer and an oxidizer.

70. (Previously Presented): The process of Claim 69, wherein said catalyst is a mixture of a persulfate salt and a metabisulfite salt.

71. (Previously Presented): The process of Claim 24, wherein the light valve is stabilized against aging by oxygen and by ultraviolet light, by the addition of a hindered amine stabilizer, which is soluble in said optically active layer and said liquid.

72. (Previously Presented): The light valve of claim 8, wherein the acrylamide has the following general structure:



wherein A+B+C is between 2 and 5.